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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/667,681 | 09/22/2003 | Noriyasu Sakai | 14225-022001 / F1030476US | 9392 |
| 26211 | 7590 | 03/08/2005 | EXAMINER | |
| FISH & RICHARDSON P.C. CITIGROUP CENTER 52ND FLOOR 153 EAST 53RD STREET NEW YORK, NY 10022-4611 | | | GEYER, SCOTT B | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2812 | |

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,681

Applicant(s)

SAKAI ET AL.

Examiner

Scott B. Geyer

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7,8 and 11 is/are rejected.
- 7) ☒ Claim(s) 3,5,6,9 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>0804</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The references cited within the IDS document, received on August 20, 2004 (paper no. 0804), have been considered.

Drawings

3A. Figures 13A-13C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3B. The drawings are objected to because of the following informalities:

The following numerals are identified in drawing figures 13A through 13C, but are not identified within the specification: 125B, 121C, 117, 115, 129. The applicant should

amend the specification to include an explanation of these numerals (without the addition of new matter) or remove them from the drawings. *The drawings have been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware of in the drawings.*

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Specification

4. The disclosure is objected to because of the following informalities:

Page 1, line 11: change "Fig. 13" to - - Figs. 13(A)-13(C) - -;

Page 1, line 17: change "Fig." to - - Figs. - -;

Page 5, line 7: change "substrate 25A" to - - wire 25A - -;

Page 7, line 1: change "Fig. 13 is a view" to - - Figs. 13(A) through 13(C) are views - -;

Page 7, line 21: change "Fig. 3" to - - Figs. 3(A)-3(C) - -;

Page 1, line 19: numeral 121 is not in the drawings. Change to numeral 121A, 121B or 121C (also occurs on page 2)

Page 2, line 9: numeral 128 is not in the drawings. Change to numeral 128A or 128B;

Page 3, line 11: numeral 122 is not in the drawings. Change to numeral 122A or 122B;

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware of in the specification.

Appropriate correction is required.

Claim Objections

5. Claims 7 and 9 are objected to because of the following informalities:

In claim 7, line 2 and claim 9, line 4: change "planner" to - - planar - -.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6A. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant's claim 2 recites "resin sealing is performed by each cavity in each block". None of the applicant's drawings depict a cavity in each block, and the block is merely the foot print area where a chip will be placed. For purposes of examining this claim, the limitation "resin sealing is performed by each cavity in each block" is interpreted to mean "resin sealing is performed to cover each chip that is placed on each block".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 1, 2, 4, 7, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al. (6,767,767 B2) in view of Lee et al. (5,924,190).

8A. As to **claim 1**, Hayashida et al. teach a method of forming an encapsulated semiconductor chip according to a first embodiment, which is described by figures 1-19 (see also column 6, line 25 et seq.). Circuit elements (i.e. chips) 10 are attached to a

planar body (i.e. substrate) 20. The substrate has conductive patterns as shown by the more detailed figure 6B (which is the encapsulated chip after the molding step).

Multiple chips are attached to a substrate and encapsulated as evidenced by figure 1. A lower mold 30B and upper mold 30A are brought together around the chips-on-substrate structure as shown in figure 1, and the upper mold has an air vent 37. An insulating resin (i.e. encapsulating resin) 8 flows into the mold to encapsulate the chips. The chips are then separated to form the product as shown by figure 6A-6B (see also figures 7-19, especially figures 18-19). Hayashida et al. do not teach the lower mold having an air vent. However, Lee et al. teach a similar chip molding method wherein both the upper mold and the lower mold halves have air vents (see figures 1, 3, 6, 11 or 14). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Hayashida et al. with a mold having air vents in the upper and lower mold portions, as taught by Lee et al. so as to allow for total air escape from both the top and bottom surfaces of the article being molded, which would also reduce or eliminate unwanted air pockets.

8B. As to claim 2, Hayashida et al. teach blocks formed by a plurality of mounting portions arranged in a matrix form, and resin sealing is performed to cover all this chips that are arranged in matrix form on the blocks (see figures 1 and 2).

8C. As to claim 4, Hayashida et al. teach a planar body (i.e. a chip substrate) that has multi-layered conductive patterns laminated with an insulating layers 9 (see column 10, lines 42 et seq.).

8D. As to claim 7, Hayashida et al. teach a portion of the substrate being sandwiched by the mold, as shown in figure 1.

8E. As to claim 8, Hayashida et al. teach the circuit element on the substrate to be a semiconductor chip 10, as shown in figure 1.

8F. As to claim 11, Lee et al. teach an air vent “striding” over a peripheral part of the cavity, and the air vent extends from inside the cavity to outside the cavity, as can be plainly seen in figures 1, 3, 6, 11 or 14.

Allowable Subject Matter

9. Claims 3, 5 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record and to the examiner’s knowledge does not teach or render obvious, at least to the skilled artisan, the instant invention regarding: the planar body being a conductive foil, which has a surface provided with conductive patterns formed in convex shape by separation grooves, as recited in claim 3; air vents disposed in parallel, as recited in claim 5; and wherein a plurality of blocks are aligned, and within each block are conductive patterns forming a plurality of mounting portions that are arranged in a matrix form on the substrate, as recited in claim 9. Claim 6 is dependent upon claim 5; claim 10 is dependent upon claim 9.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott B. Geyer whose telephone number is (571) 272-1958. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Scott B. Geyer
Patent Examiner
Art Unit 2812
March 2, 2005

SCOTT GEYER
PATENT EXAMINER



3/2/05